

Series: IUE 13
White Dwarfs in Dwarf Novae
Final Report

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The purpose of this project was to obtain spectra of the Lyman-alpha region in quiescent dwarf novae to search for the photospheric absorption line of the white dwarf component in these binaries. Low dispersion, small-aperture IUE observations were attempted on six dates in 1990: June 10 (SS Cyg and RU Peg), June 21 (EX Hya, SS Cyg, and RU Peg), June 30 (EX Hya and RU Peg), October 2 (SU UMa), October 11 (TZ Per), and October 21 (SS Cyg, RX And, and SU UMa). RU Peg was never clearly acquired due to confusion from a nearby field star and inaccurate coordinates.

TZ Per clearly showed a broad absorption due to Lyman-alpha, but the bottom of the line was filled in, partially due to solar emission scatter from the geocorona and possibly partially due to emission from the accretion disk. SS Cyg may show a narrow absorption at Lyman-alpha, but it is heavily contaminated by the geocoronal component. EX Hya and SU UMa both showed an emission line spectrum with no evidence for the white dwarf.

Comparisons between models and the observed spectra were published, as described below. Even for this preliminary work, it was necessary to derive an extension of the SWP instrumental degradation curve up to the time of the observations. Since then, most of our analysis time has been spent in attempting to model instrumental effects. The significant amount of contamination of these data by geocoronal Lyman-alpha, even when using IUE's small aperture, caused us to investigate schemes for subtracting a model of the image of the apertures seen in Lyman-alpha from the line-by-line file prior to extracting the spectrum of the source. The algorithm presented by Ponz at the May 1981 Three Agency Meeting was found not to work on these data. Derivation of a new model is in progress, but has not been completed as of the time of this final report.

Preliminary results were published in the following reports.

Holm, A.V., Lanning, H., Mattei, J.A., and Nelan, E., 1991, Journal of the American Association of Variable Star Observers, Vol. 20, 166. "Searching for the White Dwarf in Dwarf Novae"

Holm, A.V., Lanning, H., Mattei, J.A., and Nelan, E., 1993, Bulletin of the American Astronomical Society, Vol. 25, 909. "Lyman-alpha Absorption in Quiescent Dwarf Novae"

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